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SFUND RECORDS CTR 88072805

#### **MEMORANDUM**

TO:

Nancy Riveland-Har

Remedial Project Manager Cleanup Section 4, SFD-7-4

THROUGH:

Rose Fong

**ESAT Project Officer** 

Quality Assurance (QA) Office, PMD-3

FROM:

Doug Lindelof

Data Review and QA Document Review Task Manager

Environmental Services Assistance Team (ESAT)

ESAT Contract No.: 68-W-01-028

Task Order No.: B01

Technical Direction No.: B0105091

DATE:

May 23, 2002

SUBJECT:

Review of Analytical Data, Tier 3

Attached are comments resulting from ESAT Region 9 review of the following analytical data:

SITE:

Omega Chem OU-2

SITE ACCOUNT NO.: CERCLIS ID NO.:

09 BC LA02 CAD042245001

CASE NO.:

30205

SDG NO.:

Y0E21

LABORATORY:

A4 Scientific, Inc. (A4)

ANALYSIS:

Volatiles

SAMPLES:

9 Water Samples

COLLECTION DATE:

February 25 and 26, 2002

**REVIEWER:** 

Santiago Lee, ESAT/LDC

The comments and qualifications presented in this report have been reviewed by the EPA Task Order Project Officer (TOPO) for the ESAT Contract, whose signature appears above.

If there are any questions, please contact Rose Fong (QA Program/EPA) at (415) 972-3812.

#### Attachment

cc: Ray Flores, CLP PO USEPA Region 6

Steve Remaley, CLP PO USEPA Region 9

**ESAT File** 

CLP PO: [] FYI

[X] Attention

[] Action

SAMPLING ISSUES: [X] Yes

#### Data Validation Report

Case No.:

30205 SDG No.: Y0E21

Site: Laboratory:

Omega Chem OU-2 A4 Scientific, Inc. (A4) Santiago Lee, ESAT/LDC

Reviewer: Date:

May 23, 2002

### I. Case Summary

### SAMPLE INFORMATION:

Samples: Y0E21 through Y0E27, Y0EB6, and Y0EB7

Concentration and Matrix: Low Level Water

Analysis: Volatiles

SOW: OLC03.2

Collection Date: February 25 and 26, 2002

Sample Receipt Date: February 27, 2002

Extraction Date: Not Applicable

Analysis Date: March 8, 9, 13, and 15, 2002

## FIELD QC:

Trip Blanks (TB): Y0E25 and Y0EB7

Field Blanks (FB): Not Provided
Equipment Blanks (EB): Not Provided
Background Samples (BG): Not Provided
Field Duplicates (D1): Not Provided

• • • • •

## METHOD BLANKS AND ASSOCIATED SAMPLES:

VBLK93: Y0E25 and Y0E26

VBLK94: Y0E26DL, Y0E23DL, Y0E22DL, and Y0E21DL VBLK95: Y0E21, Y0E23, Y0E24, Y0E27, Y0EB6, and Y0EB7

VBLK99: Y0E22, Y0E24DL, and Y0E27DL

VBLK02: VHBLK01

#### TABLES:

1A: Analytical Results with Qualifications

1B: Data Qualifier Definitions for Organic Data Review

2: Calibration Summary

DL - Dilution

### CLP PO ACTION:

None.

#### CLP PO ATTENTION:

- 1) Detected results for methylene chloride, chloroform, and tetrachloroethene (PCE) in some samples are qualified as nondetected and estimated (U,J) due to contamination in the method blanks and trip blanks.
- 2) Detected results and quantitation limits for several analytes are qualified as estimated (J) due to holding time problems.
- 3) Detected results and quantitation limits for several analytes are qualified as estimated (J) due to calibration problems.
- 4) Detected results and quantitation limits for several analytes are qualified as estimated (J) due to deuterated monitoring compound (DMC) recoveries outside QC limits.
- 5) Detected result for PCE in sample Y0E21 is qualified as estimated (J) due to internal standard area problem.

#### SAMPLING ISSUES:

Detected results for chloroform in samples Y0EB6 and Y0E27 are qualified as nondetected and estimated (U,J) due to contamination in trip blank Y0EB7.

#### **ADDITIONAL COMMENTS:**

Matrix spike/matrix spike duplicate (MS/MSD) pair was not analyzed because the Organic Traffic Report & Chain of Custody Record indicates that VOA MS/MSD is not rrequired.

Tentatively identified compounds (TICs) detected in the samples are reported on the Form 1LCFs. Other than laboratory artifacts/contaminants (retention times = 9.0 and 14.1 minutes), TICs were detected in samples Y0E23, Y0E26, Y0EB6 and Y0EB7 (see attached Form 1LCFs).

This report was prepared in accordance with the following documents:

- ESAT Region 9 Standard Operating Procedure 901, Guidelines for Data Review of Contract Laboratory Program Analytical Services (CLPAS) Volatile and Semivolatile Data Packages,
- USEPA Contract Laboratory Program Statement of Work for Low Concentration Organics Analysis, OLC03.2, December 2000; and
- USEPA Contract Laboratory Program National Functional Guidelines for Low Concentration Organic Data Review, June 2001.

## II. Validation Summary

### Acceptable/Comment

HOLDING TIMES	NO	C
GC/MS TUNE/GC PERFORMANCE	YES	
INITIAL CALIBRATIONS	NO	D, E
CONTINUING CALIBRATIONS	NO	D, F
LABORATORY BLANKS	NO	В
FIELD BLANKS	NO	В
DEUTERATED MONITORING COMPOUNDS (DMCs)	NO	G
MATRIX SPIKE/DUPLICATES	N/A	
INTERNAL STANDARDS	NO	Н
COMPOUND IDENTIFICATION	YES	
COMPOUND QUANTITATION	NO	A, I, J, K
SYSTEM PERFORMANCE	YES	
FIELD DUPLICATE SAMPLE ANALYSIS	N/A	

N/A = Not Applicable

### III. Validity and Comments

- A. The following results, denoted with an "L" qualifier, are estimated and flagged "J" in Table 1A.
  - All results below the contract required quantitation limits

Results below the contract required quantitation limits (CRQLs) are considered to be qualitatively acceptable, but quantitatively unreliable, due to the uncertainty in analytical precision near the limit of detection.

- B. The following results are qualified as nondetected and estimated due to method blank or trip blank contamination, and are flagged "U,J" in Table 1A.
  - Tetrachloroethene in samples Y0E22 and Y0EB7
  - Methylene chloride in storage blank VHBLK01
  - Chloroform in samples Y0EB6 and Y0E27

Tetrachloroethene (PCE) was found in the method blanks VBLK94, VBLK95, and VBLK99 at concentrations of  $0.2~\mu g/L$  each. Methylene chloride was found in the method blank VBLK02 at a concentration of 0.2. Chloroform was found in the trip blank Y0EB7 at a concentration of  $0.7~\mu g/L$ . Results for the samples listed above are considered nondetected and estimated (U,J) and the quantitation limits have been increased according to the blank qualification rules presented below.

No positive results are reported unless the concentration of the compound in the sample exceeds 10 times the amount in any associated blank for the common laboratory contaminants or 5 times the amount for other compounds. If the sample result is greater than the CRQL, the quantitation limit is raised to the sample result (U,J). If the sample result is less than the CRQL, the result is reported as nondetected (U,J) at the CRQL.

Although not detected in the associated method blank, methylene chloride has been commonly found in the field and in many laboratories. The user should note that the methylene chloride results reported for samples Y0E22 (0.2  $\mu$ g/L) and Y0E27 (0.1  $\mu$ g/L) may be artifacts.

Although trichloroethene (TCE;  $0.2 \mu g/L$ ) was found in the storage blank VHBLK01, no data are qualified because TCE was not detected in the samples or was detected at concentrations which exceeded 5 times the concentration found in the storage blank.

Although acetone (8 and  $10 \mu g/L$ ) and toluene (0.2 and 0.2  $\mu g/L$ ) were found in the trip blanks, no data are qualified because they were not detected in the samples or were detected at concentrations which exceeded 5 times the concentrations found in the trip blanks.

A laboratory method blank is laboratory reagent water analyzed with all reagents, DMCs, and internal standards and carried through the sample preparation and analytical procedures as the field samples. The laboratory method blank is used to determine the level of contamination introduced by the laboratory during preparation and analysis.

A trip blank is laboratory reagent water which is shipped from the laboratory to the field with the empty sample containers and back to the laboratory with the filled sample containers. A trip blank is intended to detect contaminants introduced during the transport of the samples to the laboratory, although any laboratory introduced contamination will also be present. Contaminants that are found in the trip blank which are absent in the laboratory blank could be indicative of a problem in transportation, storage, the bottle preparation procedure, or other indeterminate error.

- C. Detected results and quantitation limits for the following analytes are qualified as estimated due to missed technical holding times, and are flagged "J" in Table 1A.
  - All analytes except acetone in sample Y0E22
  - TCE in sample Y0E24
  - Acetone and PCE in sample Y0E27

These water analyses exceeded the 14-day 40 CFR 136 (Clean Water Act) technical holding times as shown below.

	Date	Date	# of Days
Sample	Collected	<u>Analyzed</u>	Exceeded
$\overline{\text{Y0E22}}$	02/25/02	03/13/02	4
Y0E24DL	02/25/02	03/14/02	5
Y0E27DL	02/26/02	03/14/02	4

Detected results for the samples listed above may be biased low. Where the results are nondetected, false negatives may exist.

- D. Detected results and quantitation limits for the following analytes are qualified as estimated due to low relative response factors (RRFs) in the initial and continuing calibrations, and are flagged "J" in Table 1A.
  - Acetone, methyl acetate, and 2-butanone in all samples, storage blank, and method blanks

Average RRFs below the 0.05 validation criterion were observed for the analytes listed above in the initial calibration performed on January 31, 2002. RRFs below the 0.05 validation criterion were observed for the analytes listed above in the continuing calibrations performed on March 8, 9, 13, and 15, 2002 (Table 2).

Detected results for the analytes listed above should be considered as the minimum values at which these analytes are present in the samples. Where the results are nondetected, false negatives may exist.

The DMCs 2-butanone-d5 and 2-hexanone-d5 also had RRFs below the 0.05 validation criterion in the initial and continuing calibrations (Table 2). The quantitation of the analytes associated with these DMCs may have been affected by the low RRFs. See Comment F for a complete listing of sample data qualified by DMC results outside of recovery criteria.

The relative response factor evaluates instrument sensitivity and is used in the quantitation of the target analytes.

- E. Detected results and quantitation limits for the following analytes are qualified as estimated due to large percent relative standard deviations (RSDs) in the initial calibration, and are flagged "J" in Table 1A.
  - · Acetone and methylene chloride in all samples, storage blank, and method blanks

Percent RSDs exceeded the ≤30.0% validation criterion for the analytes listed above in the initial calibration performed on January 31, 2002 (Table 2).

The initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of the analytical sequence and of producing a linear calibration curve.

- F. Detected results and quantitation limits for the following analytes are qualified as estimated due to large percent differences (%Ds) in the continuing calibrations, and are flagged "J" in Table 1 A
  - Isopropylbenzene in samples Y0E25 and Y0E26 and method blank VBLK93
  - Methylene chloride in samples Y0E21, Y0E23, Y0E24, Y0E27, Y0EB6, and Y0EB7, storage blank VHBLK01, and method blanks VBLK94, VBLK95, and VBLK02
  - Methylene chloride, cyclohexane, methylcyclohexane, PCE, and isopropylbenzene in sample Y0E22 and method blank VBLK99

Percent differences exceeded the  $\pm 30.0\%$  validation criterion for the analytes listed above in the continuing calibrations performed on March 8, 9, 13, and 15, 2002 (Table 2).

The continuing calibration checks the instrument performance daily and produces the relative response factors (RRFs) for target analytes that are used for quantitation.

- G. Detected results for the following analytes are qualified as estimated due to DMC recovery outside method QC limits, and are flagged "J" in Table 1A.
  - {1,1-Dichloroethene-d2}
  - trans-1,2-Dichloroethene and cis-1,2-dichloroethene in sample Y0E23

{Chloroform-d}

- 1,1-Dichloroethane (1,1-DCA) in sample Y0E26
- 1,1-DCA and chloroform in sample Y0E23

Specific DMC recoveries which were outside the QC limits for the target analytes listed above are shown below.

Sample	· DMC	%Recovery	QC Limits
Y0E23	1,1-Dichloroethene-d2	580	65-130
	Chloroform-d	126	80-123
Y0E26	1,1-Dichloroethene-d2	4400	65-130
	Chloroform-d	600	80-123

Detected results for affected analytes may be biased high.

Deuterated monitoring compounds (DMCs) are organic compounds which are similar to the target analytes in chemical composition and behavior in the analytical process, but which are not normally found in environmental samples. All samples are spiked with DMCs prior to purging. DMCs provide information about both the laboratory performance on individual samples and the possible effects of the sample matrix on the analytical results.

- H. Detected result for the following analyte is qualified as estimated due to low internal standard (IS) area, and is flagged "J" in Table 1A.
  - PCE in sample Y0E21

Area for the IS 1,4-dichlorobenzene-d4 in sample Y0E21DL (18449) is below the lower QC limit of 19157.

- I. Detected result for the following analyte is qualified as estimated due to high analyte concentration, and are flagged "J" in Table 1A.
  - Acetone in sample Y0E26

Concentration of acetone in the undiluted analysis of the sample Y0E26 (340  $\mu$ g/L) exceeded the 5-250  $\mu$ g/L calibration range. The sample was re-analyzed at a 200-dilution; acetone was not detected (1000U).

- J. Samples Y0E21 and Y0E23 were analyzed at 10-fold dilutions due to high levels of target analytes. The CRQLs listed for these samples in Table 1A have been multiplied by the dilution factor.
- K. Sample Y0E21 was analyzed at a 200-fold dilution due to the high level of PCE. Result for PCE is reported from the diluted sample in Table 1A; results for all other analytes are reported from the undiluted sample.

Sample Y0E22 was analyzed at a 200-fold dilution due to the high level of acetone. Result for acetone is reported from the diluted sample in Table 1A; results for all other analytes are reported from the undiluted sample.

Sample Y0E23 was analyzed at a 200-fold dilution due to high levels of trichlorofluoromethane, 1,1-dichloroethene, 1,1,2-trichloro-1,2,2-trifluoroethane, TCE, and PCE. Results for these analytes are reported from the diluted sample in Table 1A; results for all other analytes are reported from the 10-fold diluted sample.

Sample Y0E24 was analyzed at a 2-fold dilution due to the high level of TCE. Result for TCE is reported from the diluted sample in Table 1A; results for all other analytes are reported from the undiluted sample.

Sample Y0E26 was analyzed at a 200-fold dilution due to high levels of trichlorofluoromethane, 1,1-dichloroethene (1,1-DCE), 1,1,2-trichloro-1,2,2-trifluoroethane, cis-1,2-DCE, chloroform, TCE, and PCE. Results for these analytes are reported from the diluted sample in Table 1A; results for all other analytes are reported from the undiluted sample.

Sample Y0E27 was analyzed at a 10-fold dilution due to high levels of acetone and PCE. Results for acetone and PCE are reported from the diluted sample in Table 1A; results for all other analytes are reported from the undiluted sample.

Case No.: 30205 Site: Omega Chem OU-2

Lab: A4 SCIENTIFIC, INC. Reviewer: Santiago Lee, ESAT/LDC

Date: May 22, 2002

QUALIFIED DATA

Analysis Type: Low Level Water Samples

Concentration in ug/L

For Volatiles

Station Location :	GW102-MW9	D 0054		GW102-MW9	30.2040		GW102-MW	0.0040		GW102-MW	2 00 42		GW102-MW	E 0040		GW102-MW	10.0057		GW102-MW1	0.2000	
1		96-0054		Y0EB7	3B-2010	тв	Y0E21	6-0042		Y0E22	3-0042		Y0E23	3-0049		Y0E24	10-0057		Y0E25	0-2009	тв
Sample ID :	Y0EB6					IB .				1											IR I
Collection Date :	2/26/2002			2/26/2002			2/25/2002			2/25/2002			2/25/2002			2/25/2002			2/25/2002		j
Dilution Factor :	1.0			1.0		-	10,0			1.0			10.0			1.0			1.0		-
Volatile Compound	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com
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1,1,2-Trichloro-1,2,2-trifluoroethane	0.4L	ñ		0.50			3L	J×	AJ.	0.5U	يتزلان	_ <u>C</u>	1200		JK	16	7		<u>₹</u> 0.5U	( 38. 55	Transport Cranstance
Acetone	59	J	DE	10	J	DE	50U	J	DEJ	1700		K	50U	J	DEJ	5U	J	DE	8	J.	DE
Carbon Disulfide	0.50			** 0.5U			.5U	March 18	المنتها المنتها	0.1L	J ,	AC	5Ú.		J	0.5U		2	0.5∪		
Methyl Acetate	0.5U	J	D	0.5U	J	D	5U	J	DJ	0.5U	J	CD	5U	J	DJ	0.5U	J	D	0.5U	J	D
Methylene Chloride	<u>\$</u> 30.5U	ال ال	::F	**. *0.5U	:::J>	, F			. FJ	0.2L	J.	ACF	<u>0</u> 5U ≰		∴FJ <b>≫</b>		ر الا	);F	0.5U		
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Carbon Tetrachlonde	0.50			0.50	2.4		50		J	`":' 0.5U`	) ``	; C	ຼ່ 5ປ		3 J	0.5ป*			0.50		
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1,2-Dichloropropane	0.5U		l	0.5U			5U	1	J	0.5∪	J	c ·	5U		J	0.5U			0.5U		
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2-Hexanone	5U			5U			50U	L	J	5∪	J	С	50U		J	5U			5U		1
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SDG No.: Y0E21

Site: Omega Chem OU-2 Lab: A4 SCIENTIFIC, INC.

Reviewer: Santiago Lee, ESAT/LDC

Date: May 22, 2002

QUALIFIED DATA
Concentration in ug/L

Analysis Type: Low Level Water Samples

For Volatiles

Station Location :	GW102-MW9	B-0054		GW102-MW	9B-2010		GW102-MW	6-0042		GW102-MW	3-0042		GW102-MW5	5-0049		GW102-MW1	10-0057		GW102-MW	10-2009	
Sample ID :	Y0EB6			Y0EB7		тв	Y0E21			Y0E22			Y0E23			Y0E24			Y0E25		тв
Collection Date :	2/26/2002			2/26/2002			2/25/2002			2/25/2002			2/25/2002			2/25/2002			2/25/2002		
Ditution Factor :	1.0			1.0			10.0			1.0			10.0			1.0			1.0		
Volatile Compound	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Vai	Com	Result	Val	Com
Chlorobenzene	0.5U			0.5U			5U		J	0.5U	٦	Ç	5U -		J	0.5U			0.5ป		
Ethylbenzene 🗼 🐰	0.5U			0.5U			5U	at in the same	J	0.5U	ĴĴ	c <sup>©</sup>	5U		j j	0.5U		70.	0.5U	als.	
Xylenes (total)	0.5U			0.5U			5U		J	0.5U	J	С	5U		J	0.5U			0.5U		
Styrene	0.50		T	0.50			5U	And the second	a J	0.5Ü	៌ រ	C	5U	XX.	J	0.5U%			0.5U		A.
Bromoform ·	0.5U		******	0.5U			5U		J	0.5U	J	С	5U		J	0.5U			. 0.5U		
Isopropylbenzene*	. 0.5∪		- Daa	0.50		E. J.	5U.			` 0.5Ü		CF	5U	<u> </u>	- Siek	0.5U	· ; · )		0.5U	Ĵ	CF
1,1,2,2-Tetrachloroethane	0.5U			0.5U			5บ		J	0.5∪	J	С	5∪		J	0.5U			0.5∪	l	
1,3-Dichlörobenzene	ິ' `0.5∪		C 24	.0.5U	200		5U	2.1	J	0.50	النا	C.	5U	1000	ي را	*****0:5U			0.50	37	8' '
1,4-Dichlorobenzene	0.5U			0.5U			5U		J	0.5U	J	С	5U		J	0.5U			. 0.5U		
1:2-Dichlorobenzene	0.5U	مُدُنَّة فَعُنْسُا الْمُ	2.0 Ge . 32	0.5U	018				<b>J</b>	0.5U	13. <b>J</b> 3999	C	5U		Ţ	0.5U	<u> </u>	9 <u>2</u> (1	0.50	<b>S</b> N (3)	
1,2-Dibromo-3-chloropropane	0.5U		(agent modes) in the	0.5U	Men v anni		5U	O M 1009.	J	0.5U	J	С	5∪	name or other parties of	. J	0.5U			0.5U	-	ar 17284040000000000000000000000000000000000
1.2,4 Trichlorobenzene	0.5U	- F	\$ 3 3	₩ 0.5⊍	140 9		ź ŚU "	e was d	#: <b>J</b>	0.5U	J	.≰C.≱	<b>₹</b> (\$ 700	1 1500% 1. 1500%	J	0.5U			0.5U	n. A safid	·
1,2,3-Trichlorobenzene	0.5U			0.5U			5U		J	0.5∪	J	С	5U		J	0.5∪			0.5U		

Val - Validity. Refer to Data Qualifiers in Table 1B.

'D1, D2, etc. - Field Duplicate Pairs

FB - Field Blank, EB - Equipment Blank, TB - Trip Blank, BG - Background Sample

Com - Comments. Refer to the Corresponding Section in the Narrative for each letter.

CRQL - Contract Required Quantitation Llmit, N/A - Not Applicable, NA - Not Analyzed

SDG No.: Y0E21

Tier 3 Table 1A

Site: Omega Chem OU-2 Lab: A4 SCIENTIFIC, INC. Reviewer: Santiago Lee, ESAT/LDC

QUALIFIED DATA

Analysis Type: Low Level Water Samples .

Date: May 22, 2002

Concentration in ug/L

For Volatiles

Station Location :	GW102-MW2	2-0055		GW102-MW9	9A-0032		Method Blan	k		Method Blan	k		Method Blank	(		Method Blan	k		Method Blank	(	$\neg$
Sample ID :	Y0E26			Y0E27			VBLK02			VBLK93			VBLK94			VBLK95			VBLK99		- 1
Collection Date :	2/26/2002			2/26/2002						1											]
Dilution Factor :	1.0			1.0			1.0			1.0			1.0			1.0			1.0		- 1
Volatile Compound	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com
Dichlorodifluoromethane	3			0.5∪			0.5U			0.5Ų			0.5U			0.5U			0.5U		
Chloromethane	0:5U⊛			0.5Ú			0.5U		ा क्षणां च स	0.5U	10	4. 67 <b>4</b>	0.50			0.50	5	Market S. Mark	0.5U		Marie Control
Vinyl Chloride	0.5∪		.,	0.5U		*,440.00,000,000,000,000,000,000,000,000,	0.5U			0.5U			0.5U			0.5U		. "	0.5∪		
Bromomethane	0.5U	\$ 10°	SPE	0.5U		36 .	0.5U		100	0.5U		å å	0.50			0.5U	23.75		0.5U		C.
Chloroethane	0.5U :			0.5U			0.5U			0.5∪			0.5U		l	0.5U			0.5U		ll
Trichlorofluoromethane	. 910 j	. ندستان	· K	0.5U	<b>V.</b> V.	2 2	0.5U	Mine-in-		0.5U		70	0.5U			્રે _ુ. <b>ે</b> 0.5∪_્	alia		0.5∪		
1,1-Dichloroethene	2700		, K.	2			0.5U	******		0.5U			0.5U			0.5U		21.79 WWW.	0.5U		l
1.1:2-Trichloro-1,2.2-trifluoroethane	2400	- T	K	0.4L		*A			and the same	0.5U		and or second second	0.5U	1.13		0.5Ŭ			0.5U	المستسسم	
Acetone	340	<b>ن</b>	L 3004	890	J	CK	5U	general page year		5U			5U			5U	,	-2011/20000000000000	5U		
Carbon Disulfide	0.5U	Same and		0.2L	ال ال	- A	0.5U		and and a	0.50			0.5U		_ننق	<u></u> 0.5U	·		<u>0.5∪</u>	<u>- , 3/</u>	
Methyl Acetate	0.5U			0.5U			0.5U	and the second		0.5U			0.5U			0.5U		900 # 87 <b>77</b> 9009473	0.5U		
Methylene Chloride		<u> </u>	in a	0.1L	<u> </u>			J. J.	AF.		. «J.».,	:AF	0.5U~		F.	0.5∪ ∜		F	<u>s.</u>	<u> </u>	Z ES
trans-1,2-Dichloroethene	10	1907 O 1986	7 184. C	0.5U	·		0.5U			0.5U		myamiya rang	0.5U	gggw, chigas		0.5U	7777708888	gran za	0.5U	THE STREET	
Methyl tert-Butyl Ether	0.3L	J.J.	A	2.0.5U	لأستأم سأشا		0.5U	المستندر		0.5U	7 <b>2</b>	& man	0.5Ü	2.2	<u> </u>	0.5U		(5) (6) (6)	0.50		Ex-
1,1-Dichloroethane	14	J	G	0.5U	A	**** ****	0.5U	28023 S		0.5U	200.20 - 0.000	### 1 275	0.5U	507 · · · · 3803.1		0.5U	n i delimbe		0.5U	2400000004	\$ 1867-15E
cis-1,2-Dichloroethene:	₹42L	3.	AK	₹ \$ 0.5U		A. L	0,500		úŠ	0.5U			0.5U		. 2	0.5∪	48	¥	0.50		195
2-Butanone	5U		, ,	5U	: 13772	· · · · · · · · · · · · · · · · · · ·	5U		4 700	5U	entre interes		5U			5U	38880		5∪	** ***************************	وميره
Bromochloromethane	0.5∪	4. k	Jpr	, 0.5U			0.5U -	Ċ.	* 14.	0.5Ü	01.8°	1.8 -1	0.5U	. "Ž	àir.	0.5∪			0.5⊍		48.35
Chloroform	1200	-m: mgr	K	1U	J TORKE WAS	B	0.5U			0.5U	1982-91	1000	0.5U	w Steen 7 1 1	tour	0.5U	177,5	S	0.5U	r kyrka	(* 1301)
1,1,1-Trichloroethane	20	2.3		0.5U			0.5U ຼື			0.5U	: X	أم من الله	<u>\$</u> 0.5U			0.5U	:	\$ 12	0.5U		J. dash d
Cyclohexane	0.2L	in a distrib	A TOTAL TRE	0.5U	- , <del></del>	,	0.5U	27. S		0.5U	數學與表示	DK:	0.5U		95" . T X	0.5U	1.1.50000	SOUTH .	0.5U	J	F
Carbon Tetrachloride	0.3L	التقاددا	ĹΑ	0.50	تنسلف	# 1	0.5U		<u> </u>	0:5U		X	0.5U			3 0.5U		Z	0.50		
Benzene	0.5U	a	0 % (S)	0.5U 0.5U		····	0.5U	energi i		0.5U	577 177	*8.35****	0.5U	7	Z	0.5U		Troughts:	0.5U		
1,2-Dichloroethane	0.5U		Acres 10 To	101 1 101 1000 WOM NOW NOW		1	0.50	34.		,0.5U	لأست سنسم		₹ 0.5U	i		0:50	نشا مستند		0.5U		
Trichloroethene	1000		K	9			0.5U		77.57	0.5U		Marine	0.5U	6		0.5U		Silve:	0.5U		
Methylcyclohexane	0.1L	ا ا	Ą	0.5U	···	, ,	0.50		i indi	<u>∗ 0.5U</u>			0.5U	ندلا		0.50		222	0.5U	∑ J	Ę
1,2-Dichloropropane	0.5U			0.5U		/ Mary No. 10*******	0.5U	2000 marin		0.5U	J 2537	S. ELLESSON	0.5U	c	- 70 TK	0.5U		and SWC	0.5U	~~·~~~	. ,
Bromodichloromethane	0.5U		<b>.</b> :	0.5U			0.5U			0.5U&			0.5∪ 🥍	1 3		0.50	i Lia		0.5U	2.555	
cis-1,3-Dichloropropene	0.5U	-5 1 j 2 j		0.5U		804	0.5U		12000	0.5U	2° - 1° -		0.5U			0.5U		3	0.5U	- 1992	
4 Methyl-2-pentanone		: \$ Cal	55	5⊍	S. Startin	Liski'	.∳ 5U			CALLED STAN MARKET A	80 7	A >	<u>5</u> € 5U	, ut	W.	.5U		za ist	v. v. v. vendere	استانسد	i diki di
Toluene	0.5U	y 48 %	45 (*	0.5U 0.5U	9 380	. 335	0.5U	<i>-</i>	7	0.5∪	1 7 38		0.5U		W - 3	0.5U	ež <sup>r s</sup> i	w. ·	0.5U		1. 10.00
trans-1,3-Dichloropropeng	,0.5 <u>U</u>	F !	•	/ Y			0.50	-22	. Xx.x.	0.5U <sub>6</sub>	. EN		0.50	**************************************	98. A	0.5∪	2	ş-	0.5U		1 . 1
1,1,2-Trichloroethane	4	apr 10 gs .		0.5U	30 v		0.5U	<b>8</b> 400	.	0.5U		-8573	0.5U		80 . V	0.5U	n cogn		0.5U	egy	·/
Tetrachloroethene	4600		К	70	. <u></u> `J	. CK	0.5U 🧃	· · · · · · · · · · · · · · · · · · ·	DE L	<b></b>			0:2L∻	इतेष 🗆	Α	* 0.2L	J	Ĺ.A	0.2L°್	∭ J	A
2-Hexanone	5U	F1807	80 25 08 80 25 08	5U 0.5ປີ		977777 <b>3</b> 81	5U		7887.77	5U		· · · · . §	5U	* 3		5U			5U		
Dibromochloromethane (	0.5U		his lade, and	to we a mobilization to the control of the	ermanistrate a reason	1		-4.		0.5U		erior e disease	\$ 20.5U			0.50			0.5Ü		3
1,2-Dibromoethane	0.5U	<u></u>		0.5U			0.5U	L.		0.5ป			0.5U			0.5∪			0.5U		

SDG No.: Y0E21

Tier 3 Table 1A

Site: Omega Chem OU-2 Lab: A4 SCIENTIFIC, INC.

Reviewer: Santiago Lee, ESAT/LDC

Date: May 22, 2002

QUALIFIED DATA
Concentration in ug/L

Analysis Type: Low Level Water-Samples

For Volatiles

Station Location :	GW102-MW2	2-0055		GW102-MW9	A-0032	-	Method Blan	k		Method Blan	k		Method Blank	(		Method Blank	k		Method Blant	<	
Sample ID :	Y0E26			Y0E27			VBLK02			VBLK93			VBLK94			VBLK95			VBLK99		,
Collection Date ;	2/26/2002			2/26/2002																	
Dilution Factor :	1.0			1.0			1.0			1.0			1.0			1.0			1.0		
Volatile Compound	Result	Val	Com	Result ·	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com
Chlorobenzene	0.4L	Ĺ	Α	0.5U			0.5U			0.5∪			0.5∪			0.5U			0.5U	reporter rr	. 10.450-
Ethylbenzene	0.5U			0.5U	/K2		0.5U	****		0.5U	2022	48 F F			e stead is.	0.5U	5 - 3000 - A		0.5U	and the same	interest community
Xylenes (total)	0.5U			0.5U			0.5U			0.5U			0.5∪			0.5∪			0.5U		
Styrene	0.5U .*			0.5Ú₂	منقند		0.5Ü	·		0.5∪	·	Zana ya	0.5∪			0.5U			0.5Ú		
Bromoform	0.5U			· 0.5U			0.5U			0.5∪	٠.	l	0.5U			0.5U			0.5∪		
Isopropylbenzene	0.5U	J	F		2		0.50	8		0.5∪	<u>ل</u> کِ د،	F	₩ <u>0</u> .5Ú			0.5U	****	1,24	0.5U	J	3F
1,1,2,2-Tetrachloroethane	0.5U			0.5U		15.417	0.5U			0.5U	<b>.</b>		0.5U			0.5U			0.5∪		emin - Coule
1,3-Dichlorobenzene	0.5U			③ 0.5U	alati	2.	0.5U		3	0.5U	2.82 2.28	: Atalyana.	0.5Ú 💥	200		0.5U	34. ·	2000 a sec	0.5U	Mar	
1,4-Dichlorobenzene	0.5∪			0.5∪		*******	0.5U			0.5U			0.5∪			0.5U			0.5U		
1,2-Dichlorobenzene	0.3L	J	. A.	0.5U			≪0.5U				2		. ≥ 0.5U		7 1999 1802 	0.5U	ن. دند دانشه		. 0.5⊍≥	diameter	- Co
1,2-Dibromo-3-chloropropane	0.5U			0.5U			0.5U			0.5U		man in a const	0.5U		r: > 10000 + 10000	0.5U		Aug. 37 - 11 - 10	0.5U		
1,2,4-Trichlorobenzene	0.5U∞	energy of	×	0.5U⊷		4	0.5∪	C 2 50	200 SEP	0.5U	121		0.5U*							minimateri	# 185.T
1,2,3-Trichlorobenzene	0.5U			0.5ป			0.5U			0.5U	<u> </u>		0.5U			0.5U			0.5∪		

Val - Validity. Refer to Data Qualifiers in Table 1B.

Com - Comments. Refer to the Corresponding Section in the Narrative for each letter.

CRQL - Contract Required Quantitation Llmit, N/A - Not Applicable, NA - Not Analyzed

D1, D2, etc. - Field Duplicate Pairs

FB - Field Blank, EB - Equipment Blank, TB - Trip Blank, BG - Background Sample

ANALYTICAL RESULTS
Tier 3 Table 1A

Case No.: 30205

SDG No.: Y0E21

Site: Omega Chem OU-2 Lab: A4 SCIENTIFIC, INC.

Reviewer: Santiago Lee, ESAT/LDC

Date: May 22, 2002

QUALIFIED DATA
Concentration in ug/L.

Analysis Type: Low Level Water Samples

For Volatiles

Station Location Storage Blank Sample ID VHBLK01 CROL Collection Date Dilution Factor 1.0 Volatile Compound Result Val Com Result Val Com Result Val Result Val Result Val Com Result Val Com Result Val Com Com Com Dichlorodifluoromethane 0.5 Chioromethane .∗0.5U 0.5 Vinvl Chloride 0.5U 0.5 - **2**5 **₹0.5**% Bromomethane ~0.5U Mary. Chloroethane 0.5U 0.5 3 Trichlorofluoromethane 0.5U **∌0.5**± 367 ...... 1,1-Dichloroethene 0.5U 0.5 1.1.2-Trichloro-1.2.2-trifluoroethane 0:5 30 7957 0.5U \*\* Acetone 5U 5 Carbon Disulfide ુ: 0.5U 0.5 u aakii alte: 14.5 Methyl Acetate 0.5U 0.5 - 000 mm - -~~. ~~~~ Methylene Chloride ∘ 0.5Ü® J‱ ®BF≫ 0.5 trans-1,2-Dichloroethene 0.5U 0.5 100 3000 323 0.50 Methyl tert-Butyl Ether 0.5 22 1,1-Dichloroethane 0.5U 0.5 TŞ Ş cis-1,2-Dichloroethene 0.5U 0.5 5 2-Butanone 5U 1 × 36 Bromochloromethane & 0.5U :0.5 Chloroform 0.5 0.5U : . \$ 1,1,1-Trichloroethane 0.5U 0.5 Cyclohexane 0.5U 0.5 0.5 Carbon Tetrachloride 0.50 ( Air) Benzene 0.5U 0.5 · 1.2-Dichloroethane 0.5U 0.5 坐 žž Trichloroethene 0.2L 0.5 0.5U 0.5 Methylcyclohexane 155 1,2-Dichloropropane 0.5U 0.5 WAX -H Ö.5Ů 0.5 Bromodichloromethane cis-1,3-Dichloropropene 0.5U 0.5 ´5Ů 4-Methyl-2-pentanone : 368 14:2 \$ D Toluene 0.5U 0.5 01.74819.77 1866-867 0.5U . 0.5 \$ J trans-1,3-Dichloropropene 1,1,2-Trichloroethane 0.5U 0.5 1387 2.3220000 Tetrachloroethene 0.50 0.5 g copper 2-Hexanone 5U 5 0:5Ü .0.5 Dibromochloromethane ۵÷ .3: **(48)** 0.5U 1.2-Dibromoethane

SDG No.: Y0E21

Tier 3 Table 1A

Site: Omega Chem OU-2 Lab: A4 SCIENTIFIC, INC.

Reviewer: Santiago Lee, ESAT/LDC

Date: May 22, 2002

QUALIFIED DATA Concentration in ug/L Analysis Type: Low Level Water Samples

For Volatiles

Chlorobenzene	Station Location : Sample ID : Collection Date : Dilution Factor :	Storage Blan VHBLK01 1.0	k		CRQL											٠						
Ethylbenzene	Volatile Compound	Result	Val	Com	Result	_Val	Com	Result	Val	Com	Result	Vai	Com	Result	Val	Com	Result	Val	Com	Result	Vai	Com
Styrene         0.5U         0.5           Bromoform         0.5U         0.5           Isopropylbenzene         0.5U         0.5           1.1,2,2-Tetrachloroethane         0.5U         0.5           1,3-Dichlorobenzene         0.5U         0.5           1,4-Dichlorobenzene         0.5U         0.5           1,2-Dichlorobenzene         0.5U         0.5           1,2-Dibromo-3-chloropropane         0.5U         0.5		***************************************	* *		0.5		; 58+						, <u> </u>		2°	٠,٠			, ,	4.5		5. 44.
Isopropylbenzene	A Compa	16 ACC 11 ACC 1881	. 198	ny paolitica	ander ander i indikality i	4 5 °	. :. . : :		Á.:								à., \$2.	n n nine		10 20		79. 1.25
1.1.2.2-Tetrachloroethane		A 215 NO		Ž.	30 10 22		. Tal.		. 77	\$ 1-IJ.		aa		10 <b>3</b> 0	47		.¥	7			<b>W</b>	77.0 7.0 mai/
1,2-Dichlorobenzene 0.5U 0.5 1,2-Dibromo-3-chloropropane 0.5U 0.5	1,1,2,2-Tetrachloroethane		主省:			ilian s				Ě	TAKAS		. Aine		T 4		· .					**************************************
	and the total and the same and	0:5U		6. 1.6 8. 1.8.		183	i v	X	: 0%	. 12:14	omes chinks.	A . 19094	20		· :				0	és de		4
	1,2,4-Trichlorobenzene	0.50	. 'a		0.5		·.	e. v	. ₩₩1.			50,500	55555 a. :586		1 m at.	500 ·		45 	مارس دادهٔ همک	1000	ampe e desame e	Skor Laura

Val - Validity. Refer to Data Qualifiers in Table 1B.

Com - Comments. Refer to the Corresponding Section in the Narrative for each letter. CRQL - Contract Required Quantitation Limit, N/A - Not Applicable, NA - Not Analyzed D1, D2, etc. - Field Duplicate Pairs

FB - Field Blank, EB - Equipment Blank, TB - Trip Blank, BG - Background Sample

#### **TABLE 1B**

#### DATA QUALIFIER DEFINITIONS FOR ORGANIC DATA REVIEW

The definitions of the following qualifiers are prepared according to the document, "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review," February 1994.

- U The analyte was analyzed for but was not detected above the reported sample quantitation limit.
- L Indicates results which fall below the Contract Required Quantitation Limit. Results are estimated and are considered qualitatively acceptable but quantitatively unreliable due to uncertainties in the analytical precision near the limit of detection.
- J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- NJ The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.
- UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
- R The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

## Table 2 Calibration Summary

Case No.:

Site:

30205 SDG No.: Y0E21 Omega Chem OU-2 A4 Scientific

Laboratory:

Reviewer: .

Santiago Lee, ESAT/LDC May 23, 2002

Date:

# RELATIVE RESPONSE FACTORS

	RRF	RRF	RRF	RRF	RRF	RRF
Analysis Date:	01/31/02	03/08/02	03/08/02	03/09/02	03/13/02	03/15/02
Analysis Time:	0928-1147	1145	2227	1501	1954	0926
GC/MS I.D.:	C-5973	C-5973	C-5973	C-5973	C-5973	C-5973
<u>Analyte</u>	<u>Init.</u>	Cont.	Cont.	Cont.	Cont.	Cont.
Acetone	0.022	0.028	0.021	0.024	0.020	0.021
Methyl Acetate	0.044	0.049	0.037	0.039	0.040	0.034
2-Butanone	0.024	0.028	0.025	0.026	0.022	0.023
2-Butanone-d5	0.027	0.026	0.023	0.021	0.030	0.028
2-Hexanone-d5	0.027	0.025	0.022	0.019	0.028	0.028

## PERCENT RELATIVE STANDARD DEVIATIONS

	%RSD
Analysis Date:	01/31/02
Analysis Time:	0928-1147
GC/MS I.D.:	C-5973
<u>Analyte</u>	<u>Init.</u>
Acetone	32.6
Methylene Chloride	41.0
2-Hexanone-d5	33.1

## PERCENT DIFFERENCES

•		and the second s			
	%D	%D	%D	%D	%D
Analysis Date:	03/08/02	03/08/02	03/09/02	03/13/02	03/15/02
Analysis Time:	1145	2227	1501	1954	0926
GC/MS I.D.:	C-5973	C-5973	C-5973	C-5973	C-5973
<u>Analyte</u>	Cont.	Cont.	Cont.	Cont.	Cont.
Isopropylbenzene	+32.4			+37.4	
Methylene Chloride		-32.3	-31.1	+69.9	-36.9
Cyclohexane				+38.2	
Methylcyclohexane				+36.0	
Tetrachloroethene				+32.1	

## ASSOCIATED SAMPLES AND METHOD BLANKS

Init. 01/31/02: All samples, storage blank, and method blanks. Cont. 03/08/02: Y0E25, Y0E26, VBLK93

Cont. 03/08/02: Y0E25, Y0E26, VBLK93 Cont. 03/08/02: Y0E26DL, Y0E23DL, Y0E22DL, Y0E21DL, VBLK94 Cont. 03/09/02: Y0E21, Y0E23, Y0E24, Y0E27, Y0EB6, Y0EB7, VBLK95 Cont. 03/13/02: Y0E22, Y0E24DL, Y0E27DL, VBLK99 Cont. 03/15/02: VHBLK01, VBLK02

## LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS EPA SAMPLE NO.

Y0E23

Lab Name: A4 SCIENTIFIC, INC. Contract: 68-W-01-038

Lab Code: A4 Case No.: 30205 · Client No.:

SDG No.: Y0E21

Lab Sample ID: 1388.004

Date Received: 02/27/02

Lab File ID: C3750

Date Analyzed: 03/09/02

Purge Volume: 25 (ML)

Dilution Factor: 10.0

GC Column: RTX-624 ID: 0.32 (MM)

Length: 60 (M)

_	CAS NUMBER	COMPOUND NAME	RT	EST. CONC. (UG/L)	Q
01		TINKNOWN Sichlowtiffworthane	3.59	7.3	J
02		UNKNOWN 1 0	3.67	13	J
03	000076-12-0	Ethane, 1,1,2,2-tetrachloro-	7.68	5.8	JN
04		1,2-diffuno-			
05		U			
06		SL, 423/02.			
07					
08					
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30					

## LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS EPA SAMPLE NO.

Y0E26

Lab Name: A4 SCIENTIFIC, INC. Contract: 68-W-01-038

Lab Code: A4

Case No.: 30205 Client No.:

SDG No.: Y0E21

Lab Sample ID: 1388.007

Date Received: 02/27/02

Lab File ID: C3711

Date Analyzed: 03/08/02

Purge Volume: 25

(ML)

Dilution Factor: 1.0

GC Column: RTX-624

ID: 0.32 (MM)

Length: 60 (M)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC. (UG/L)	Q
01		THENOWN Archoratiffunothone	3.59	18	J
02		пикиоми 🔭 🗸 д	3.66	. 25	J
03		UNKNOWN	6.95	40	J
04	000822-50-4	Cyclopentane, 1,2-dimethyl-,	7.16	0.58	JN
05		UNKNOWN	8.78	0.60	J
06		UNKNOWN	11.11	1.2	J
07		UNKNOWN	12.19	0.92	J
08		UNKNOWN	13.14	0.99	J
09		UNKNOWN	14.37	0.73	J
10	_				
11		St 4/23/02			
12	<u> </u>				
13					
14				-	_
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# LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS EPA SAMPLE NO.

YOEB6

Lab Name: A4 SCIENTIFIC, INC. Contract: 68-W-01-038

Lab Code: A4

Case No.: 30205 Client No.:

SDG No.: Y0E21

Lab Sample ID: 1388.009

Date Received: 02/27/02

Lab File ID: C3741

Date Analyzed: 03/09/02

Purge Volume: 25

(ML)

Dilution Factor: 1.0

GC Column: RTX-624 ID: 0.32 (MM) Length: 60 (M)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC. (UG/L)	Q
01		UNKNOWN	4.06	0.51	J
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
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## LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS EPA SAMPLE NO.

Y0EB7

Lab Name: A4 SCIENTIFIC, INC. Contract: 68-W-01-038

Lab Code: A4 Case No.: 30205 Client No.:

SDG No.: Y0E21

Lab Sample ID: 1388.010

Date Received: 02/27/02

Lab File ID: C3740

Date Analyzed: 03/09/02

Purge Volume: 25 (ML)

Dilution Factor: 1.0

GC Column: RTX-624

ID: 0.32 (MM) Length: 60 (M)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC. (UG/L)	Q
01		UNKNOWN	5.75	0.54	J
02					
03					
04					
05					
06					
07					
0.8					
09					
10		·			
11					
12					-
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